Proposed Rules

Federal Register
Vol. 77, No. 248
Thursday, December 27, 2012

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, 74, 87, 90, and 97

[ET Docket No. 12–338; FCC 12–140]

WRC–07 Implementation

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: This document proposes to amend the Commission's rules to implement allocation decisions from the World Radiocommunication Conference (Geneva, 2007) (WRC–07), make other allocation changes that are not related to WRC–07, and make certain updates to its service rules. The proposed actions are designed to conform the Commission's rules to the *WRC–07 Final Acts* and to provide significant benefits to the American public.

DATES: Comments must be filed on or before February 25, 2013, and reply comments must be filed on or before March 27, 2013.

FOR FURTHER INFORMATION CONTACT: Tom Mooring, Office of Engineering and Technology, (202) 418–2450, email: *tom.mooring@fcc.gov*, TTY (202) 418–2989.

ADDRESSES: You may submit comments, identified by ET Docket No. 12–338, by any of the following methods:

- *Federal Communications Commission's Web Site: http://fjallfoss.fcc.gov/ecfs2/.* Follow the instructions for submitting comments.
- *Mail:* Tom Mooring, Office of Engineering and Technology, Room 7–A123, Federal Communications Commission, 445 12th Street SW., Washington, DC 20554.
- *People with Disabilities:* Contact the FCC to request reasonable accommodations (accessible format documents, sign language interpreters, CART, etc.) by email: *FCC504@fcc.gov* or phone: 202–418–0530 or TTY: 202–418–0432.

For detailed instructions for submitting comments and additional information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's *Notice of Proposed Rule Making,* ET Docket No. 12–338, FCC 12–140, adopted November 15, 2012, and released November 19, 2012. The full text of this document is available for inspection and copying during normal business hours in the FCC Reference Center (Room CY–A257), 445 12th Street SW., Washington, DC 20554. The complete text of this document also may be purchased from the Commission's copy contractor, Best Copy and Printing, Inc., 445 12th Street SW., Room, CY–B402, Washington, DC 20554. The full text may also be downloaded at: *www.fcc.gov.* Pursuant to §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings,* 63 FR 24121 (1998).

- *Electronic Filers:* Comments may be filed electronically using the Internet by accessing the ECFS: *http://fjallfoss.fcc.gov/ecfs2/.*
- *Paper Filers:* Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St. SW., Room TW–A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of *before* entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street SW., Washington, DC 20554.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to *fcc504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at 202–418–0530 (voice), 202–418–0432 (tty).

Summary of Notice of Proposed Rulemaking

1. In the *Notice of Proposed Rulemaking (NPRM)*, the Commission proposed to amend parts 1, 2, 74, 78, 87, 90, and 97 of its rules to implement allocation decisions from the World Radiocommunication Conference (Geneva, 2007) (WRC–07) concerning portions of the radio frequency (RF) spectrum between 108 MHz and 20.2 GHz and to make certain updates to its rules in this frequency range. The *NPRM* follows the Commission's July 2010 *WRC–07 Table Clean-up Order,* which made certain non-substantive, editorial revisions to the Table of Frequency Allocations (Allocation Table) and to other related rules. The Commission also addressed the recommendations for implementation of the *WRC–07 Final Acts* that the National Telecommunications and Information Administration (NTIA) submitted to the Commission in August 2009. As part of its comprehensive review of the Allocation Table, the Commission also proposed to make allocation changes that are not related to the *WRC–07 Final Acts* and update certain service rules, and requested comment on other allocation issues that concern portions of the RF spectrum between 137.5 kHz and 54.25 GHz.

2. Specifically, the Commission proposed to:

- Raise the secondary amateur service allocation in the 1900–2000 kHz band to primary status, remove the Federal and non-Federal radiolocation service (RLS) allocations from this band, and remove this band from §§ 90.103, 97.301, and 97.303.
- Allocate the 108–117.975 MHz band to the aeronautical mobile route

(R) service (AM(R)S) on a primary basis for Federal/non-Federal shared use, limited to systems operating in accordance with recognized international aeronautical standards and Resolution 413 (Rev.WRC–07), and in the 108–112 MHz sub-band, to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions. Further, the Commission proposed to prohibit the proposed AMR(R)S use from constraining the use of the 88–108 MHz band by stations in the broadcasting service (FM radio stations) operating in accordance with 47 CFR part 73.

• Allocate the 156.4875–156.5125 MHz and 156.5375–156.5625 MHz bands to the fixed and land mobile services on a primary basis for non-Federal use, subject to not causing harmful interference to, nor claiming protection from, the maritime mobile VHF radiocommunication service, and with the licensing of this spectrum restricted to the area consisting of VHF Public Coast Station Areas 10–42. The *NPRM* also requested comment on whether additional areas can be licensed while fully protecting VHF Channel 70 reception.

• Allocate the 156.5125–156.5375 MHz band to the maritime mobile service (MMS) on a primary basis for Federal and non-Federal use, restricted to the following types of operations: Distress, urgency, safety, and calling via Digital Selective Calling (DSC) techniques.

• Make the frequencies 156.525 MHz and 156.8 MHz available for search and rescue (SAR) operations concerning manned space vehicles.

• Make the frequency 156.3 MHz available for use by aircraft stations for the purpose of SAR operations and other safety-related communications, permit Federal ship and coast stations to operate on certain navigation frequencies (156.775 MHz and 156.825 MHz) on a primary basis, and simplify the U.S. Table by combining these proposed provisions with existing provisions in a new U.S. footnote (US52).

• Allocate the 161.9625–161.9875 MHz (AIS 1) and 162.0125–162.0375 MHz (AIS 2) bands to the mobile-satellite service (MSS) on a secondary basis for Federal/non-Federal shared use for the reception of automatic identification system (AIS) emissions from stations operating in the maritime mobile service. The *NPRM* also solicited comment on whether the Commission should implement the WRC–12 allocation decisions with regard to the AIS 1 and AIS 2 bands, *i.e.,* whether the Commission should allocate these bands to the aeronautical mobile (off-route) service (AM(OR)S) and the MSS (Earth-to-space) on a primary basis, restrict the use of these bands by the AM(OR)S to AIS emissions from SAR aircraft, and require that these operations not constrain the operation of allocated services in adjacent bands.

• Amend the quiet zone rules in § 1.924(f) to reflect the areas listed in paragraph (a) of US270, limit its applicability to RLS systems, and move the revised text from paragraph (f) to paragraph (e).

• Amend NG120 by revising ''band 928–960 MHz'' and ''mobile operations'' to ''bands 928–929 MHz, 932–932.5 MHz, 941–941.5 MHz, and 952–960 MHz'' and ''associated mobile operations,'' respectively, by deleting the phrase ''as specified in 47 CFR part 101.''

• Allocate the 960–1164 MHz band to the AM(R)S on a primary basis for Federal/non-Federal use to the 960–1164 MHz band and require that any AM(R)S systems operating in the 960–1164 MHz band not cause harmful interference to, claim protection from, or impose constraints on aeronautical radionavigation service (ARNS) systems operating in that band.

• Remove the conditional secondary non-Federal fixed-satellite service (FSS) allocation from the 1390–1392 MHz and 1430–1432 MHz bands.

• Delete the unused non-Federal aeronautical mobile telemetry (AMT) allocation in the 2310–2320 MHz band from US339 and remove non-Federal access to two unused frequencies (2312.5 MHz and 2352.5 MHz) that are available for telemetry or telecommand operations of expendable and reusable launch vehicles.

• Update US203 to list the radio astronomy stations that observe in the 4800–4940 MHz and 14.47–14.5 GHz bands.

• Allocate the 5091–5150 MHz band to the aeronautical mobile service on a primary basis for Federal/non-Federal shared use, restricted to surface applications at airports, AMT transmissions, and aeronautical security transmissions. The *NPRM* proposed to restrict AMT use of the 5091–5150 MHz band to the 52 flight test areas listed in new footnote US111, except that additional locations may be authorized on a case-by-case basis. The *NPRM* requested comment on whether aeronautical security transmissions should be excluded from the list of permitted uses. The *NPRM* proposed to remove the precedence that the Microwave Landing System (MLS) currently has over other uses of the 5091–5150 MHz band and to extend the date after which no new assignments may be made to earth stations providing feeder links for non-geostationary MSS systems to January 1, 2016.

• Amend part 87 of the Commission's rules to bring the proposed AMT allocation in the 5091–5150 MHz band into immediate effect, remove all references to the 1525–1535 MHz and 2310–2345 MHz bands from part 87, and list the 2390–2395 MHz band in all appropriate rule sections.

• Raise the secondary Federal RLS allocation in the 9000–9200 MHz and 9300–9500 MHz bands to primary status, allocate the 9300–9500 MHz band to the Earth exploration-satellite service (EESS) (active) and the space research service (SRS) (active) on a primary basis for Federal use, allocate the 9800–9900 MHz band to the EESS (active) and SRS (active) on a secondary basis for Federal use, require that the use of these proposed allocations not cause harmful interference to existing primary operations, and limit active sensor use of the 9300–9500 MHz band to systems requiring more than 300 MHz of bandwidth.

• Allocate the 9300–9500 MHz and 9800–9900 MHz bands to the EESS (active) and the SRS (active) on a secondary basis for non-Federal use. The *NPRM* solicited comment on whether there is a non-Federal requirement for primary EESS (active) and SRS (active) allocations in the 9300–9500 MHz band.

• Amend US401 and §§ 1.924, 74.32, and 78.19 of the Commission's rules by adding coordination areas in San Miguel, California and Guam for terrestrial operations in the 17.7–19.7 GHz band, consistent with a request by NTIA. The *NPRM* also proposed to amend US334 to limit primary Federal earth stations in the 17.8–18.3 GHz and 19.3–19.7 GHz sub-bands to the Denver, Colorado; Washington, DC; San Miguel, California; and Guam areas.

• Amend §§ 1.924, 74.32, and 78.19 to bring better consistency between these rules and to update these rules, *e.g.,* to remove the Morrison, Colorado location from § 78.19. The *NPRM* sought comment on whether the coordination requirements for Multichannel Video Programming Distributors (MVPD) operations in § 74.32, and references in § 1.924 to MVPD operations pursuant to parts 74 and 78, should be removed from the Commission's rules.

• Allocate the 18–18.1 GHz band to the meteorological-satellite service for space-to-Earth transmission on a primary basis.

• Update the list of radio astronomy stations in US388 that observe in the

81–86 GHz, 92–94 GHz, and 94.1–95 GHz bands by removing the Five Colleges Radio Observatory and by adding the Heinrich Hertz Submillimeter Observatory, which is located at Mount Graham, Arizona. The *NPRM* proposed to require coordination within 150 kilometers of the new observatory at Mount Graham.

• Implement WRC–07's mandatory unwanted emission limits in the 22.55–23.55 GHz band for all new NGSO inter-satellite service systems, and requested comment on how these limits should apply to the incumbent licensees system on a going-forward basis.

• Implement WRC–07's mandatory unwanted emission limits for non-Federal FSS earth stations that transmit in the 49.7–50.2 GHz and 50.4–50.9 GHz bands. The *NPRM* sought comment on how adoption of these mandatory unwanted emission limits for earth stations transmitting in the 49.7–50.2 GHz band will affect the implementation of the Commission's band plan for the 36–51.4 GHz band (V-band) and on whether and how these provisions should apply to existing licensees in these bands.

• Urge licensees of fixed stations in the 31–31.3 GHz band to limit the maximum elevation angle of the antenna main beam to 20° and to employ automatic transmitter power control (ATPC). The *NPRM* solicits comment on whether the Commission should adopt WRC–07's mandatory unwanted emission limit for the 31–31.3 GHz band or whether an alternative emission limit would be sufficient. The NRPM also requested comment on whether the aeronautical mobile service allocation should be removed from the 31–31.3 GHz band.

• Implement WRC–07's mandatory unwanted emission limits for future non-Federal fixed stations that transmit in the 51.4–52.6 GHz band.

• Urge operators in the 1390–1395 MHz and 1427–1452 MHz bands to comply with the non-mandatory unwanted emission levels specified in ITU Resolution 750 (except that Wireless Medical Telemetry Service devices would be excluded).

• Revise US265 by removing the phrase ''per 250 kHz,'' by adding the advisory language for fixed point-to-point systems, and by prohibiting point-to-multipoint use of the 10.6–10.68 GHz band. The *NPRM* also proposed to urge licensees to employ ATPC and to permit licensees holding a valid authorization as of the effective date of the Report and Order in this proceeding to continue to operate as authorized. The *NPRM* requested comment on whether the Commission should: (1) Prohibit fixed stations with main beam elevation angles greater than 20° from transmitting on frequencies in the 10.6–10.68 GHz band; (2) require fixed stations (using paired frequencies) to transmit on frequencies in the 10.6–10.68 GHz band using the lower elevation angle; (3) require the use of ATPC; (4) raise the maximum equivalent isotropically radiated power (EIRP) limit from 40 to 48 dBW; and (5) urge licensees to limit the off-axis EIRP above 20° to −10 dBW.

• Implement the spectrum sharing criteria adopted at WRC–07 for the 36–37 GHz band (which is not currently licensed by the Commission).

• Renumber various footnotes in accordance with Commission policy, to replace various placeholder footnotes with the international footnotes adopted at WRC–07, remove duplicative rule/unneeded text, correct grammatical/typographical errors in the Commission's rules, and otherwise update the Commission's rules.

3. In addition, the Commission solicited comment on whether it should:

• Allocate the 135.7–137.8 kHz band to the amateur radio service on a secondary basis, with amateur stations restricted to an EIRP of 1 watt and required to protect power line carrier (PLC) operations.

• Remove a lightly-used primary non-Federal AMT allocation in the 2345–2360 MHz band and an unused primary radionavigation service (RNS) allocation from the 24.75–25.05 GHz band. If the Commission decides to remove the RNS allocation from the 24.75–25.05 GHz band, then it would amend NG167 by employing the international footnote 5.535 text in the 24.75–25.05 GHz band, remove the Part 87 cross reference from the Allocation Table, and remove the 24.75–25.05 GHz band from §§ 87.173(b) and 87.187(x).

Initial Regulatory Flexibility Analysis

4. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in this *NPRM.* Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines specified in the *NPRM* for comments. The Commission will send a copy of this *NPRM,* including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the **Federal Register**.[3]

A. Need for, and Objectives of, the Proposed Rules

5. The Commission proposed to amend parts 1, 2, 74, 78, 87, 90, and 97 of its rules to implement allocation decisions from the World Radiocommunication Conference (Geneva, 2007) (WRC–07) concerning the radio frequency (RF) spectrum between 108 MHz and 20.2 GHz and otherwise make certain updates to its rules in this frequency range. The rules proposed in this *NPRM* affect the frequency bands and radio services discussed in section D, below.

B. Legal Basis

6. The proposed action is authorized under sections 1, 4, 301, 302(a), and 303(b), (c), and (f) of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154, 301, 302(a), and 303(b), (c), and (f).

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rule Will Apply

7. The RFA directs agencies to provide a description of and, where feasible, an estimate of, the number of small entities that may be affected by the proposed rules, if adopted.[4] The RFA generally defines the term ''small entity'' as having the same meaning as the terms ''small business,'' ''small organization,'' and ''small governmental jurisdiction.'' [5] In addition, the term ''small business'' has the same meaning as the term ''small business concern'' under the Small Business Act.[6] A ''small business concern'' is one which: (1) Is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[7]

Small Businesses, Small Organizations, and Small Governmental

[1] *See 5 U.S.C. 603.* The RFA, *see 5 U.S.C. 601–612,* has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, (SBREFA) Pub. L. No. 104–121, Title II, 110 Stat. 857 (1996).

[2] *See 5 U.S.C. 603(a).*

[3] *See* 5 U.S.C. 603(a).

[4] 5 U.S.C. 603(b)(3).

[5] 5 U.S.C. 601(6).

[6] 5 U.S.C. 601(3) (incorporating by reference the definition of ''small-business concern'' in the Small Business Act, 15 U.S.C. 632). Pursuant to 5 U.S.C. 601(3), the statutory definition of a small business applies ''unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the **Federal Register**.''

[7] 15 U.S.C. 632.

Jurisdictions. Our action may, over time, affect small entities that are *not* easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.[8] First, nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.[9] In addition, a ''small organization'' is generally ''any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.'' [10] Nationwide, as of 2007, there were approximately 1,621,315 small organizations.[11] Finally, the term ''small governmental jurisdiction'' is defined generally as ''governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.'' [12] Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.[13] We estimate that, of this total, as many as 88,506 entities may qualify as ''small governmental jurisdictions.'' [14] Thus, we estimate that most governmental jurisdictions are small.

Amateur Radio Service. Because ''small entities,'' as defined in the RFA, are not persons eligible for licensing in the amateur service, this proposed rule does not apply to ''small entities.'' Rather, it applies exclusively to individuals who are the control operators of amateur radio stations.

Satellite Telecommunications and All Other Telecommunications. Two economic census categories address the satellite industry. The first category has a small business size standard of $15 million or less in average annual receipts, under SBA rules.[15] The second has a size standard of $25 million or less in annual receipts.[16]

The category of Satellite Telecommunications ''comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.'' [17] Census Bureau data for 2007 show that 512 Satellite Telecommunications firms operated for that entire year.[18] Of this total, 464 firms had annual receipts of under $10 million, and 18 firms had receipts of $10 million to $24,999,999.[19] Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by our action.

The second category, *i.e.* ''All Other Telecommunications'' comprises ''establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.'' [20] For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.[21] Of this total, 2,347 firms had annual receipts of under $25 million and 12 firms had annual receipts of $25 million to $49, 999,999.[22] Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities.

D. Description of Projected Reporting, Record Keeping, and Other Compliance Requirements

8. In the following paragraphs, we describe the proposals and their expected impact on small entities. First, we describe the proposed deletion of unused non-Federal allocations. Second, we describe all other proposed changes. We request comment on our analysis.

9. *Deletion of Unused Allocations.* The *NPRM* proposed to delete the following unused allocations: (1) the radiolocation service (RLS) from the 1900–2000 kHz band; (2) the fixed-satellite service (FSS) from the 1390–1392 MHz and 1430–1432 MHz bands; and (3) the aeronautical mobile service (AMS) (telemetry) from the 2310–2320 MHz band. Because there are no licensees operating stations in the aforementioned radiocommunication services and frequency bands, the proposed deletions will have no impact on small entities.

10. The *NPRM* also solicited comment on deleting the aeronautical mobile service allocation from the 31–31.3 GHz band. Because there is no part 87 equipment authorized above 20 GHz, we believe that it is unlikely that this service would be used in the foreseeable future. Therefore, we believe that the proposed deletions will not affect small businesses.

11. *135.7–137.8 kHz.* The *NPRM* sought comment on whether this band should be allocated to the amateur service on a secondary basis. The only non-Federal use of this band is by Part 15 devices, such as Power Line Carrier (PLC) systems. If the band is allocated to the amateur service, amateur stations and PLC systems that operate PLC systems on electric transmission lines will most likely require coordination. We believe that any additional coordination requirements would have a *de minimis* impact on electric power companies.

12. *156.4875–156.5625 MHz.* The *NPRM* proposed to allocate the 156.4875–156.5125 and 156.5375–156.5625 MHz bands to the fixed service (FS) and land mobile service on a primary basis for non-Federal use, subject to not causing harmful interference to, nor claiming protection from, the maritime mobile VHF

[8] *See* 5 U.S.C. 601(3)–(6).

[9] *See* SBA, Office of Advocacy, ''Frequently Asked Questions,'' *web.sba.gov/faqs* (last visited May 6, 2011; figures are from 2009).

[10] 5 U.S.C. 601(4).

[11] Independent Sector, The New Nonprofit Almanac & Desk Reference (2010).

[12] 5 U.S.C. 601(5).

[13] U.S. Census Bureau, Statistical Abstract of the United States: 2011, Table 427 (2007).

[14] The 2007 U.S. Census data for small governmental organizations are not presented based on the size of the population in each such organization. There were 89,476 small governmental organizations in 2007. If we assume that county, municipal, township, and school district organizations are more likely than larger governmental organizations to have populations of 50,000 or less, the total of these organizations is 52,125. If we make the same assumption about special districts and also assume that special districts are different from county, municipal, township, and school districts, in 2007 there were 37,381 special districts. Therefore, of the 89,476 small governmental organizations documented in 2007, as many as 89,506 may be considered small under the applicable standard. This data may overestimate the number of such organizations that has a population of 50,000 or less. U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Tables 427, 426 (Data cited therein are from 2007).

[15] 13 CFR 121.201, North American Industry Classification System (''NAICS'') code 517410.

[16] 13 CFR 121.201, NAICS code 517919.

[17] U.S. Census Bureau, 2007 NAICS Definitions, ''517410 Satellite Telecommunications.''

[18] *See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.*

[19] *See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.*

[20] *http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search.*

[21] *http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.*

[22] *http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.*

radiocommunication service. The *NPRM* also proposed to reallocate the 156.5125–156.5375 MHz band to the MMS (distress, urgency, safety and calling via digital selective calling). Because all existing MMS licensees would be protected from any interference caused by the proposals, the only possible impact would be to the 20 call signs authorizing land mobile service use. Because 18 of these call signs are held by the State of Arizona; one is held by the County of Los Angeles, California (CA); and one is held by the City of La Mesa, CA, which has a population of 57,065 (2010 census), none of these licensees are small governmental jurisdictions.

13. *AIS satellite reception.* The *NPRM* proposed to permit satellites to receive Automatic Identification System (AIS) transmissions. Because this use will not be protected from harmful interference due to the operation of terrestrial services, no small entity will be negatively impacted. We believe that there may be a positive impact on Orbcomm Inc., which is a small business, if this allocation is adopted.

14. *108–117.975 MHz.* The *NPRM* proposed to allocate the band to the aeronautical mobile route service (AM(R)S) on a primary basis and to add new footnote US197A to the U.S. Table. US197A states that AM(R)S use of the 108–117.975 MHz band must not: (1) Cause harmful interference to the aeronautical radionavigation service (ARNS) (see Resolution 413); and (2) constrain the use of the 88–108 MHz band by FM radio stations operating in accordance with 47 CFR part 73. Because all incumbent licensees would be protected from interference caused by the new allocation, there can be no significant economic impact on small entities.

15. *960–1164 MHz.* The *NPRM* proposed to allocate the band to the AM(R)S on a primary basis and to add RR 5.327A to the U.S. Table. RR 5.327A states that AM(R)S use of the 960–1164 MHz band is limited to systems that operate in accordance with Resolution 417, which states that AM(R)S must not cause harmful interference to the ARNS. Because all incumbent licensees would be protected from interference caused by the new allocation, there can be no significant economic impact on small entities.

16. *5091–5150 MHz.* The *NPRM* proposed to allocate the band to the AMS on a primary basis and to add RR 5.444B to the U.S. Table. RR 5.444B, *inter alia,* restricts AMS use of the 5091–5150 MHz band to: (1) AM(R)S systems operating in accordance with international aeronautical standards, limited to surface applications at airports, and in accordance with Resolution 748, which states that this AM(R)S use may not cause harmful interference to the ARNS; (2) AMT transmissions from aircraft stations in accordance with Resolution 418, which requires that AMT operations use the spectrum sharing criteria set forth in Annex 1 of that Resolution; and (3) aeronautical security transmissions in accordance with Resolution 419, which states that administrations, in making assignments, shall ensure that AM(R)S requirements take precedence over AMS applications. Currently, non-Federal use of the 5091–5150 MHz band is limited to feeder uplinks for non-geostationary satellite orbit systems in the mobile-satellite service. No harmful interference is expected to the receivers on board the space stations.

17. *1390–1395 and 1427–1435 MHz.* The *NPRM* proposed to encourage licensees of stations authorized pursuant to parts 27 and 90 of the Commission's rules that transmit in the 1390–1395 MHz and 1427–1435 MHz band to comply with WRC–07's non-mandatory maximum values. The Commission has issued 64 call signs to 1 licensee (TerreStar 1.4 Holdings LLC) for the 1390–1395 MHz band and 13 call signs to 2 licensees (TerreStar 1.4 Holdings LLC and Mississippi State University) for the 1432–1435 MHz band. The Commission has issued 129 call signs to 47 licensees in the 1427–1432 MHz band. We believe that many of the licensees operating in these bands are small entities and that any costs and/or administrative burdens associated with the proposal will not be significant or otherwise unduly burden those small entities.

18. *1435–1452 MHz.* The *NPRM* proposed to encourage operators of aeronautical mobile telemetry (AMT) stations that transmit in the 1435–1452 MHz band to comply with WRC–07's non-mandatory unwanted emission level. The *NPRM* also request comment on whether AMT operators that can not meet this unwanted emission level should be required to seek their operational requirements in the 1452–1525 MHz band prior to operating in the 1435–1452 MHz band. As of April 24, 2012, the Commission has issued 23 calls to 13 licensees for stations in the Aeronautical and Fixed Service to operate in the 1435–1452 MHz band. We believe that at most 4 of these licensees are small businesses and that any costs and/or administrative burdens associated with the proposal will not unduly burden or have a significant economic impact on those limited number of small entities.

19. *9000–9200 MHz.* The *NPRM* proposed to raise the secondary Federal RLS from secondary to primary status. Because non-Federal RLS use is authorized on the condition that it not cause harmful interference to the secondary Federal RLS, the upgrade of the Federal RLS can have no significant economic impact on small entities.

20. *9300–9500 MHz.* The *NPRM* proposed to raise the secondary Federal RLS from secondary to primary status and to also allocate the 9300–9500 MHz band to the Earth exploration-satellite service (EESS) (active) and space research service (SRS) (active). Because non-Federal RLS use is authorized on the condition that it not cause harmful interference to the secondary Federal RLS, the upgrade of the Federal RLS can have no significant economic impact on small entities. We also believe that the proposed EESS (active) and SRS (active) allocations will have no significant economic impact on small entities.

21. *9800–9900 MHz.* The *NPRM* proposed to allocate the 9300–9500 MHz band to the EESS (active) and SRS (active) on a secondary basis. Because non-Federal RLS use is on a secondary basis to Federal RLS, we do believe that the proposed additional uses will have no significant economic impact on small entities.

22. *10.6–10.68 GHz.* The *NPRM* proposed to limit the power supplied to the antenna to -3 dBW (instead of -3 dBW/250 kHz) and to add advisory language for fixed point-to-point systems. The *NPRM* also solicits comment on whether more stringent operating requirements should apply to future fixed stations operating in this band. Because most licensed fixed stations already meet the proposed -3 dBW requirement, we do not believe that this proposal will affect a substantial number of small entities. We also do not believe that the advisory language and more stringent operating requirements would affect a substantial number of small entities.

23. *GOES Expansion.* The *NPRM* proposed to allocate the 18–18.1 GHz band to the meteorological-satellite service (space-to-Earth) on a primary basis. The use of this allocation is expected to be limited to three locations. This band is allocated to the non-Federal FS on a primary basis. If adopted, this proposal would limit future FS licensing near the receiving earth stations. We do not believe that this proposal will affect a substantial number of small entities.

24. *22.55–23.55 GHz.* The *NPRM* proposed to adopt the WRC–07's mandatory unwanted emission limits from all new non-geostationary satellite

orbit systems in the inter-satellite service transmitting in the 22.55–23.55 GHz band, and requested comment on how these limits should apply to the only incumbent licensee's (Iridium's) satellites on a going-forward basis. We do not believe that this proposal will affect a substantial number of small entities.

25. *31–31.3 GHz.* The *NPRM* proposed to urge licensees of fixed stations transmitting in the 31–31.3 GHz band to limit the maximum elevation angle of the antenna main beam to 20° and to employ automatic transmitter power control. The *NPRM* also requested comment on whether the Commission adopt WRC–07's mandatory unwanted emission limits for these stations. As of April 24, 2012, the Commission has issued 852 call signs to operate in the 31–31.3 GHz band: 109 licenses (777 call signs) in the Local Multipoint Distribution Service (LMDS); 19 licensees (23 call signs) in the Common Carrier Fixed Point-to-Point Microwave Service (CF) to 19 licensees; 9 licensees (9 call signs) in the Local Television Transmission Service (CT); 5 licensees (6 call signs) in the Microwave Public Safety Pool (MW); and 1 licensee (the State of Nevada, with 37 call signs) in the Microwave Industrial/Business Pool (MG). We believe that many of the LMDS licensees are small businesses, that at most 2 of the CF licensees are small businesses, that at most 3 of the CT licensees are small businesses, that at most 1 of the MW licensees are small governmental jurisdictions, and that the sole MG licensee is not a small entity. We do not believe that any costs and/or administrative burdens associated with the proposal will unduly burden or have a significant economic impact on those limited number of small entities.

26. *36–37, 49.7–40.2, 50.4–50.9, and 51.4–52.6 GHz.* The *NPRM* proposed to adopt WRC–07's: 1) Spectrum sharing criteria for stations in the fixed and mobile services transmitting in the 36–37 GHz band; 2) mandatory unwanted emission limits for earth stations in the fixed-satellite service transmitting in the 49.7–40.2 and 50.4–50.9 GHz bands; and 3) mandatory unwanted emission limits for fixed stations transmitting in the 51.4–52.6 GHz band. Because the Commission has not issued licenses for the 36–37 GHz, 49.7–40.2 GHz, 50.4–50.9 GHz, and 51.4–52.6 GHz bands, these proposals will have no significant economic impact on small entities.

E. Steps Taken To Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

27. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[23]

28. As we have explained in detail in section D, we do not expect that our proposals will have a significant economic impact on small entities. However, the *NPRM* requested comment on interference mitigation techniques, other than those adopted at WRC–07, which would lessen the long-term impact on all licensees in the 10.6–10.68 GHz, 22.55–23.55 GHz, and 31–31.3 GHz bands, while fully protecting passive sensor operations.

F. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rule

29. None.

Ordering Clauses

30. Pursuant to sections 1, 4, 301, 302(a), and 303 of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154, 301, 302(a), and 303, and section 553(b)(B) of the Administrative Procedure Act, 5 U.S.C. 553(b)(B), this Notice of Proposed Rule Making is hereby *adopted.*

31. *It is further ordered* that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, *shall send* a copy of this Notice of Proposed Rule Making, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects in 47 CFR Parts 1, 2, 74, 78, 87, 90, and 97

Communications equipment, International telecommunications, Radio, Satellites, Spectrum, Telecommunications.

Federal Communications Commission.

Marlene H. Dortch,

Secretary.

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 1, 2, 74, 78, 87, 90, and 97 as follows:

PART 1—PRACTICE AND PROCEDURE

1. The authority citation for part 1 continues to read as follows:

Authority: 15 U.S.C. 79 *et seq.;* 47 U.S.C. 151, 154(i), 154(j), 155, 157, 225, 227, 303(r), and 309, and the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112–96.

2. Section 1.924 is amended by revising paragraphs (e) and (f) to read as follows:

§ 1.924 Quiet zones.

* * * * *

(e) *420–450 MHz band.* Applicants for pulse-ranging radiolocation systems operating in the 420–450 MHz band along the shoreline of the conterminous United States and Alaska, and for spread spectrum radiolocation systems operating in the 420–435 MHz sub-band within the conterminous United States and Alaska, should not expect to be accommodated if their area of service is within:

(1) Arizona, Florida, or New Mexico;

(2) Those portions of California and Nevada that are south of latitude 37°10′ N;

(3) That portion of Texas that is west of longitude 104°W; or

(4) The following circular areas:

(i) 322 kilometers (km) of 30°30′ N, 86°30′ W

(ii) 322 km of 28°21′ N, 80°43′ W

(iii) 322 km of 34°09′ N, 119°11′ W

(iv) 240 km of 39°08′ N, 121°26′ W

(v) 200 km of 31°25′ N, 100°24′ W

(vi) 200 km of 32°38′ N, 83°35′ W

(vii) 160 km of 64°17′ N, 149°10′ W

(viii) 160 km of 48°43′ N, 97°54′ W

(ix) 160 km of 41°45′ N, 70°32′ W.

Note to § 1.924(e): The coordinates cited in this section are specified in terms of the ''North American Datum of 1983 (NAD 83).''

(f) *17.7–19.7 GHz band.* The following exclusion areas and coordination areas are established to minimize or avoid harmful interference to Federal Government earth stations receiving in the 17.7–19.7 GHz band:

(1) No application seeking authority for fixed stations, under parts 74, 78, or 101 of this chapter, supporting the operations of Multichannel Video Programming Distributors (MVPD) in the 17.7–17.8 GHz band or to operate in the 17.8–19.7 GHz band for any service will be accepted for filing if the proposed station is located within 20 km (or within 55 km if the modification application is for an outdoor low power operation pursuant to § 101.147(r)(14) of this chapter) of Denver, CO (39°43′ N,

[23] *See* 5 U.S.C. 603(c).

104°46′ W) or Washington, DC (38°48′ N, 76°52′ W).

(2) Any application for a new station license to provide MVPD operations in the 17.7–17.8 GHz band or to operate in the 17.8–19.7 GHz band for any service, or for modification of an existing station license in these bands which would change the frequency, power, emission, modulation, polarization, antenna height or directivity, or location of such a station, must be coordinated with the Federal Government by the Commission before an authorization will be issued, if the station or proposed station is located in whole or in part within any of the following areas:

(i) *Denver, CO area:*

(A) Between latitudes 41°30′ N and 38°30′ N and between longitudes 103°10′ W and 106°30′ W.

(B) Between latitudes 38°30′ N and 37°30′ N and between longitudes 105°00′ W and 105°50′ W.

(C) Between latitudes 40°08′ N and 39°56′ N and between longitudes 107°00′ W and 107°15′ W.

(ii) *Washington, DC area:*

(A) Between latitudes 38°40′ N and 38°10′ N and between longitudes 78°50′ W and 79°20′ W.

(B) Within 178 km of 38°48′ N, 76°52′ W.

(iii) *San Miguel, CA area:*

(A) Between latitudes 34°39′ N and 34°00′ N and between longitudes 118°52′ W and 119°24′ W.

(B) Within 200 km of 35°44′ N, 120°45′ W.

(iv) *Guam area:* Within 100 km of 13°35′ N, 144°51′ E.

* * * * *

PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

3. The authority citation for part 2 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

4. Section 2.1 is amended in paragraph (c) by revising the definitions for ''Earth Exploration-Satellite Service (EESS)'' and ''Equivalent Isotropically Radiated Power (e.i.r.p. or EIRP)'' to read as follows:

§ 2.1 Terms and definitions.

* * * * *

(c) * * *

Earth Exploration-Satellite Service (EESS). (1) A radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which:

(i) Information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from active sensors or passive sensors on Earth satellites;

(ii) Similar information is collected from airborne or Earth-based platforms;

(iii) Such information may be distributed to earth stations within the system concerned; and

(iv) Platform interrogation may be included.

(2) This service may also include feeder links necessary for its operation. (RR) (FCC)

* * * * *

Equivalent Isotropically Radiated Power (e.i.r.p. or EIRP). The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna (absolute or isotropic gain). (RR) (FCC)

* * * * *

5. Section 2.100 is revised to read as follows:

§ 2.100 International regulations in force.

The ITU *Radio Regulations,* Edition of 2008, have been incorporated to the extent practicable in Subparts A and B of this part.

6. In § 2.106, amend the Table of Frequency Allocations as follows:

a. Pages 5, 20, 22–24, 30–33, 37, 40–41, 46–47, 49, 51–52, 55–56, 58–60, and 62 are revised.

b. In the list of United States (US) Footnotes, footnotes US52, US79, US85, US100, US111, US113, US139, US145, US156, US157, US161, US197A, US227, US228D, US338A, US475, US476A, US482, US532, and US550A are added; footnotes US74, US334, US343, US401, and US519 are revised; and footnotes US37, US48, US51, US66, US77, US78, US106, US203, US226, US228, US263, US265, US290, US339, US368, US388, US398, US400, US444, and US444A are removed.

c. In the list of non-Federal Government (NG) Footnotes, footnotes NG22, NG35, NG60, and NG338A are added; and footnotes NG117, NG120, and NG144 are removed.

§ 2.106 Table of frequency allocations.

The revisions and additions read as follows:

* * * * *

BILLING CODE 6712–01–P

Table of Frequency Allocations	1800-3025 kHz (MF/HF)				Page 5
International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
1800-1810 RADIOLOCATION 5.93	1800-1850 AMATEUR	1800-2000 AMATEUR FIXED MOBILE except aeronautical mobile RADIONAVIGATION Radiolocation	1800-2000	1800-2000 AMATEUR	Amateur Radio (97)
1810-1850 AMATEUR 5.98 5.99 5.100 5.101					
1850-2000 FIXED MOBILE except aeronautical mobile 5.92 5.96 5.103	1850-2000 AMATEUR FIXED MOBILE except aeronautical mobile RADIOLOCATION RADIONAVIGATION 5.102	5.97			
2000-2025 FIXED MOBILE except aeronautical mobile (R) 5.92 5.103	2000-2065 FIXED MOBILE		2000-2065 FIXED MOBILE	2000-2065 MARITIME MOBILE	Maritime (80) Private Land Mobile (90)
2025-2045 FIXED MOBILE except aeronautical mobile (R) Meteorological aids 5.104 5.92 5.103					
2045-2160 FIXED MARITIME MOBILE LAND MOBILE 5.92	2065-2107 MARITIME MOBILE 5.105 5.106		US340 2065-2107 MARITIME MOBILE 5.105 US296 US340	US340 NG7	Maritime (80)
2160-2170 RADIOLOCATION 5.93 5.107	2107-2170 FIXED MOBILE		2107-2170 FIXED MOBILE US340	2107-2170 FIXED MOBILE except aeronautical mobile US340 NG7	Maritime (80) Private Land Mobile (90)
2170-2173.5 MARITIME MOBILE			2170-2173.5 MARITIME MOBILE (telephony) US340	2170-2173.5 MARITIME MOBILE US340	Maritime (80)

	75.4-76 FIXED MOBILE	75.4-87 FIXED MOBILE	75.4-88	75.4-76 FIXED MOBILE NG3 NG49 NG56	Public Mobile (22) Aviation (87) Private Land Mobile (90) Personal Radio (95)
	76-88 BROADCASTING Fixed Mobile 5.185	5.182 5.183 5.188 87-100 FIXED MOBILE BROADCASTING		76-88 BROADCASTING NG5 NG14 NG115 NG149	Broadcast Radio (TV)(73) LPTV, TV Translator/ Booster (74G) Low Power Auxiliary (74H)
5.175 5.179 5.187 87.5-100 BROADCASTING 5.190	88-100 BROADCASTING		88-108	88-108 BROADCASTING NG2	Broadcast Radio (FM)(73) FM Translator/Booster (74L)
100-108 BROADCASTING 5.192 5.194			US93	US93 NG5	
108-117.975 AERONAUTICAL RADIONAVIGATION 5.197 5.197A			108-117.975 AERONAUTICAL RADIONAVIGATION US197A US93		Aviation (87)
117.975-137 AERONAUTICAL MOBILE (R)			117.975-121.9375 AERONAUTICAL MOBILE (R) 5.111 5.200 US26 US28 US36		
			121.9375-123.0875 US30 US31 US33 US80 US102 US213	121.9375-123.0875 AERONAUTICAL MOBILE US30 US31 US33 US80 US102 US213	
			123.0875-123.5875 AERONAUTICAL MOBILE 5.200 US32 US33 US112		
			123.5875-128.8125 AERONAUTICAL MOBILE (R) US26 US36		
			128.8125-132.0125	128.8125-132.0125 AERONAUTICAL MOBILE (R)	
			132.0125-136 AERONAUTICAL MOBILE (R) US26		
			136-137 US244	136-137 AERONAUTICAL MOBILE (R) US244	
5.111 5.200 5.201 5.202					Page 20

144-146 AMATEUR AMATEUR-SATELLITE 5.216			144-148	144-146 AMATEUR AMATEUR-SATELLITE	Amateur Radio (97)
146-148 FIXED MOBILE except aeronautical mobile (R) 5.217	146-148 AMATEUR 5.217	146-148 AMATEUR FIXED MOBILE 5.217		146-148 AMATEUR	
148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221		148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) US319 US320 US323 US325 5.218 5.219 G30	148-149.9 MOBILE-SATELLITE (Earth-to-space) US320 US323 US325 5.218 5.219 US319	Satellite Communications (25)
149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223			149.9-150.05 MOBILE-SATELLITE (Earth-to-space) US319 US320 RADIONAVIGATION-SATELLITE 5.223		
150.05-153 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	150.05-156.4875 FIXED MOBILE		150.05-150.8 FIXED MOBILE US73 G30	150.05-150.8 US73	
			150.8-152.855 US73	150.8-152.855 FIXED LAND MOBILE NG4 NG51 NG112 US73 NG124	Public Mobile (22) Private Land Mobile (90) Personal Radio (95)
153-154 FIXED MOBILE except aeronautical mobile (R) Meteorological aids			152.855-156.2475	152.855-154 LAND MOBILE NG4 NG124	Remote Pickup (74D) Private Land Mobile (90)
154-156.4875 FIXED MOBILE except aeronautical mobile (R) 5.226				154-156.2475 FIXED LAND MOBILE NG112 5.226 NG22 NG124 NG148	Maritime (80) Private Land Mobile (90) Personal Radio (95)
	5.225 5.226		156.2475-156.5125 5.226 US52 US227 US266	156.2475-156.5125 MARITIME MOBILE NG22 5.226 US52 US227 US266 NG124	Maritime (80) Aviation (87)
156.4875-156.5625 MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227			156.5125-156.5375 MARITIME MOBILE (distress, urgency, safety and calling via DSC) 5.111 5.226 US266		
156.5625-156.7625 FIXED MOBILE except aeronautical mobile (R) 5.226	156.5625-156.7625 FIXED MOBILE 5.225 5.226		156.5375-156.7625 5.226 US52 US227 US266	156.5375-156.7625 MARITIME MOBILE 5.226 US52 US227 US266	

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156.7625-156.8375 MARITIME MOBILE (distress and calling) 5.111 5.226			156.7625-156.8375 MARITIME MOBILE (distress, urgency, safety and calling) 5.111 5.226 US52 US266		Maritime (80) Aviation (87)
156.8375-174 FIXED MOBILE except aeronautical mobile	156.8375-174 FIXED MOBILE		156.8375-157.0375 5.226 US52 US266	156.8375-157.0375 MARITIME MOBILE 5.226 US52 US266	
			157.0375-157.1875 MARITIME MOBILE US214 5.226 US266 G109	157.0375-157.1875 5.226 US214 US266	Maritime (80)
			157.1875-161.575	157.1875-157.45 MOBILE except aeronautical mobile US266 5.226 NG111	Maritime (80) Aviation (87) Private Land Mobile (90)
				157.45-161.575 FIXED LAND MOBILE NG28 NG111 NG112 5.226 NG6 NG70 NG124 NG148 NG155	Public Mobile (22) Remote Pickup (74D) Maritime (80) Private Land Mobile (90)
			161.575-161.625 5.226 US52	161.575-161.625 MARITIME MOBILE 5.226 US52 NG6 NG17	Public Mobile (22) Maritime (80)
			161.625-161.9625	161.625-161.775 LAND MOBILE NG6 5.226	Public Mobile (22) Remote Pickup (74D) Low Power Auxiliary (74H)
				161.775-161.9625 MOBILE except aeronautical mobile US266 NG6 5.226	Maritime (80) Private Land Mobile (90)
			US266		
			161.9625-161.9875 MARITIME MOBILE (AIS) 5.227A US228D		Maritime (80)
			161.9875-162.0125	161.9875-162.0125 MOBILE except aeronautical mobile 5.226	
			162.0125-162.0375 MARITIME MOBILE (AIS) 5.227A US228D		
			162.0375-173.2 FIXED MOBILE US8 US11 US13 US73 US300 US312 G5	162.0375-173.2 US8 US11 US13 US73 US300 US312	Remote Pickup (74D) Private Land Mobile (90)

			173.2-173.4	173.2-173.4 FIXED Land mobile	Private Land Mobile (90)
			173.4-174 FIXED MOBILE G5	173.4-174	
5.226 5.227A 5.229	5.226 5.227A 5.230 5.231 5.232				
174-223 BROADCASTING	174-216 BROADCASTING Fixed Mobile 5.234	174-223 FIXED MOBILE BROADCASTING	174-216	174-216 BROADCASTING NG5 NG14 NG115 NG149	Broadcast Radio (TV)(73) LPTV, TV Translator/Booster (74G) Low Power Auxiliary (74H)
	216-220 FIXED MARITIME MOBILE Radiolocation 5.241 5.242		216-217 Fixed Land mobile US210 US241 G2	216-219 FIXED MOBILE except aeronautical mobile US210 US241 NG173	Maritime (80) Private Land Mobile (90) Personal Radio (95)
			217-220 Fixed Mobile US210 US241	219-220 FIXED MOBILE except aeronautical mobile Amateur NG152 US210 US241 NG173	Maritime (80) Private Land Mobile (90) Amateur Radio (97)
	220-225 AMATEUR FIXED MOBILE Radiolocation 5.241		220-222 FIXED LAND MOBILE US241 US242		Private Land Mobile (90)
5.235 5.237 5.243		5.233 5.238 5.240 5.245	222-225	222-225 AMATEUR	Amateur Radio (97)
223-230 BROADCASTING Fixed Mobile		223-230 FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation 5.250			
	225-235 FIXED MOBILE		225-235 FIXED MOBILE	225-235	
5.243 5.246 5.247					
230-235 FIXED MOBILE 5.247 5.251 5.252		230-235 FIXED MOBILE AERONAUTICAL RADIONAVIGATION 5.250	G27		
235-267 FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A			235-267 FIXED MOBILE 5.111 5.256 G27 G100	235-267 5.111 5.256	Page 24

890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation	890-902 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation	890-942 FIXED MOBILE 5.317A BROADCASTING Radiolocation	890-902	US116 US268	
				894-896 AERONAUTICAL MOBILE US116 US268	Public Mobile (22)
				896-901 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
				901-902 FIXED MOBILE US116 US268	Personal Communications (24)
	5.318 5.325		US116 US268 G2		
	902-928 FIXED Amateur Mobile except aeronautical mobile 5.325A Radiolocation 5.150 5.325 5.326		902-928 RADIOLOCATION G59 5.150 US218 US267 US275 G11	902-928 5.150 US218 US267 US275	ISM Equipment (18) Private Land Mobile (90) Amateur Radio (97)
	928-942 FIXED MOBILE except aeronautical mobile 5.317A Radiolocation		928-932	928-929 FIXED US116 US268 NG35	Public Mobile (22) Private Land Mobile (90) Fixed Microwave (101)
				929-930 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
				930-931 FIXED MOBILE US116 US268	Personal Communications (24)
				931-932 FIXED LAND MOBILE US116 US268	Public Mobile (22)
			US116 US268 G2		
			932-935 FIXED US268 G2	932-935 FIXED US268 NG35	Public Mobile (22) Fixed Microwave (101)
			935-941	935-940 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
				940-941 FIXED MOBILE US116 US268	Personal Communications (24)
5.323	5.325	5.327			

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
(See previous page)	(See previous page)	(See previous page)	941-944	941-944	
942-960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	942-960 FIXED MOBILE 5.317A	942-960 FIXED MOBILE 5.317A BROADCASTING 5.320	FIXED US268 US301 G2	FIXED US268 US301 NG30 NG35	Public Mobile (22) Aural Broadcast Auxiliary (74E) Fixed Microwave (101)
			944-960	944-960 FIXED NG35	Public Mobile (22) Aural Broadcast Auxiliary (74E) Low Power Auxiliary (74H) Fixed Microwave (101)
960-1164 AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328			960-1164 AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 US224		Aviation (87)
1164-1215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A			1164-1215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328A US224		
1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332			1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) G132 SPACE RESEARCH (active) 5.332	1215-1240 Earth exploration-satellite (active) Space research (active)	
1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A			1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 SPACE RESEARCH (active) AERONAUTICAL RADIONAVIGATION 5.332 5.335	1240-1300 AERONAUTICAL RADIONAVIGATION Amateur Earth exploration-satellite (active) Space research (active) 5.282	Amateur Radio (97)
1300-1350 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A			1300-1350 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation G2 US342	1300-1350 AERONAUTICAL RADIONAVIGATION 5.337 US342	Aviation (87)
1350-1400 FIXED MOBILE RADIOLOCATION	1350-1400 RADIOLOCATION 5.338A		1350-1390 FIXED MOBILE RADIOLOCATION G2 5.334 5.339 US342 US385 G27 G114	1350-1390 5.334 5.339 US342 US385	

		1390-1395 5.339 US79 US342 US385	1390-1395 FIXED MOBILE except aeronautical mobile 5.339 US79 US342 US385 NG338A	Wireless Communications (27)
5.149 5.338 5.338A 5.339	5.149 5.334 5.339	1395-1400 LAND MOBILE (medical telemetry and medical telecommand) 5.339 US79 US342 US385		Personal Radio (95)
1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341		1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246		
1427-1429 SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341		1427-1429.5 LAND MOBILE (medical telemetry and medical telecommand) US350 5.341 US79	1427-1429.5 LAND MOBILE (telemetry and telecommand) Fixed (telemetry) 5.341 US79 US350	Private Land Mobile (90) Personal Radio (95)
1429-1452 FIXED MOBILE except aeronautical mobile	1429-1452 FIXED MOBILE 5.343	1429.5-1432 5.341 US79 US350	1429.5-1432 FIXED (telemetry and telecommand) LAND MOBILE (telemetry and telecommand) 5.341 US79 US350	
		1432-1435 5.341 US83	1432-1435 FIXED MOBILE except aeronautical mobile 5.341 US83 NG338A	Wireless Communications (27)
5.338A 5.341 5.342	5.338A 5.341	1435-1525 MOBILE (aeronautical telemetry) US338A		Aviation (87)
1452-1492 FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 BROADCASTING-SATELLITE 5.208B 5.345 5.341 5.342	1452-1492 FIXED MOBILE 5.343 BROADCASTING 5.345 BROADCASTING-SATELLITE 5.208B 5.345 5.341 5.344			
		5.341 US343		

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1492-1518 FIXED MOBILE except aeronautical mobile 5.341 5.342	1492-1518 FIXED MOBILE 5.343 5.341 5.344	1492-1518 FIXED MOBILE 5.341	(see previous page)		
1518-1525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.342	1518-1525 FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.344	1518-1525 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341			
1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349 5.341 5.342 5.350 5.351 5.352A 5.354	1525-1530 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354	1525-1535 MOBILE-SATELLITE (space-to-Earth) US315 US380 5.341 5.351		Satellite Communications (25) Maritime (80)
1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354				
1535-1559 MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A			1535-1559 MOBILE-SATELLITE (space-to-Earth) US308 US309 US315 US380 5.341 5.351 5.356		Satellite Communications (25) Maritime (80) Aviation (87)
1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341 5.362B 5.362C			1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.341 US85 US208 US260		Aviation (87)
1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) US319 US380 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.372 US208		Satellite Communications (25) Aviation (87)

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2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392			2200-2290 SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED (line-of-sight only) MOBILE (line-of-sight only including aeronautical telemetry, but excluding flight testing of manned aircraft) 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392 US303	2200-2290 US303	
2290-2300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)			2290-2300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	2290-2300 SPACE RESEARCH (deep space) (space-to-Earth)	
2300-2450 FIXED MOBILE 5.384A Amateur Radiolocation	2300-2450 FIXED MOBILE 5.384A RADIOLOCATION Amateur		2300-2305 G122	2300-2305 Amateur	Amateur Radio (97)
			2305-2310 US97 G122	2305-2310 FIXED MOBILE except aeronautical mobile RADIOLOCATION Amateur US97	Wireless Communications (27) Amateur Radio (97)
			2310-2320 Fixed Mobile US100 Radiolocation G2 US97 US327	2310-2320 FIXED MOBILE BROADCASTING-SATELLITE RADIOLOCATION 5.396 US97 US100 US327	Wireless Communications (27)
			2320-2345 Fixed Radiolocation G2 US327	2320-2345 BROADCASTING-SATELLITE 5.396 US327	Satellite Communications (25)
			2345-2360 Fixed Mobile US100 Radiolocation G2 US327	2345-2360 FIXED MOBILE US100 BROADCASTING-SATELLITE RADIOLOCATION 5.396 US327	Wireless Communications (27) Aviation (87)
			2360-2390 MOBILE US276 RADIOLOCATION G2 G120 Fixed US101	2360-2390 MOBILE US276 US101	Aviation (87) Personal Radio (95)

3300-3400 RADIOLOCATION 5.149 5.429 5.430	3300-3400 RADIOLOCATION Amateur Fixed Mobile 5.149	3300-3400 RADIOLOCATION Amateur 5.149 5.429	3300-3500 RADIOLOCATION US108 G2	3300-3500 Amateur Radiolocation US108	Private Land Mobile (90) Amateur Radio (97)
3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.430A Radiolocation 5.431	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.431A Radiolocation 5.433 5.282	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432B Radiolocation 5.433 5.282 5.432 5.432A	US342	5.282 US342	
	3500-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433	3500-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433	3500-3650 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110	3500-3600 Radiolocation	Private Land Mobile (90)
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile		3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433 5.435	US245 3650-3700 US109 US349	3600-3650 FIXED-SATELLITE (space-to-Earth) US245 Radiolocation 3650-3700 FIXED FIXED-SATELLITE (space-to-Earth) NG169 NG185 MOBILE except aeronautical mobile US109 US349	Satellite Communications (25) Private Land Mobile (90)
	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile		3700-4200	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) NG180	Satellite Communications (25) Fixed Microwave (101)
4200-4400 AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440			4200-4400 AERONAUTICAL RADIONAVIGATION 5.440 US261		Aviation (87)
4400-4500 FIXED MOBILE 5.440A			4400-4940 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A				4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.440A 5.442 Radio astronomy 5.149 5.339 5.443			US113 US245 US342 4940-4990 5.339 US342 US385 G122	4800-4940 US113 US342 4940-4990 FIXED MOBILE except aeronautical mobile 5.339 US342 US385	 Public Safety Land Mobile (90Y)

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4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149			4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		
5000-5010 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367			5000-5010 AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367 US211		Aviation (87)
5010-5030 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B 5.367			5010-5030 AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B 5.367 US211		
5030-5091 AERONAUTICAL RADIONAVIGATION 5.367 5.444			5030-5091 AERONAUTICAL RADIONAVIGATION US260 5.367 5.444 US211		
5091-5150 AERONAUTICAL MOBILE 5.444B AERONAUTICAL RADIONAVIGATION 5.367 5.444 5.444A			5091-5150 AERONAUTICAL MOBILE 5.444B US111 AERONAUTICAL RADIONAVIGATION US260 5.367 5.444 US211 US344	5091-5150 AERONAUTICAL MOBILE 5.444B US111 AERONAUTICAL RADIONAVIGATION US260 5.367 5.444 5.444A US211 US344	Satellite Communications (25) Aviation (87)
5150-5250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B 5.446 5.446C 5.447 5.447B 5.447C			5150-5250 AERONAUTICAL RADIONAVIGATION US260 US211 US307 US344	5150-5250 AERONAUTICAL RADIONAVIGATION US260 FIXED-SATELLITE (Earth-to-space) 5.447A US344 5.447C US211 US307	RF Devices (15) Satellite Communications (25) Aviation (87)
5250-5255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A			5250-5255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.447D 5.448A	5250-5255 Earth exploration-satellite (active) Radiolocation Space research	RF Devices (15) Private Land Mobile (90)
5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) MOBILE except aeronautical mobile 5.446A 5.447F 5.447E 5.448 5.448A			5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.448A	5255-5350 Earth exploration-satellite (active) Radiolocation Space research (active) 5.448A	
5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) 5.448C AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION 5.448D			5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B SPACE RESEARCH (active) AERONAUTICAL RADIONAVIGATION 5.449 RADIOLOCATION G56 US390 G130	5350-5460 AERONAUTICAL RADIONAVIGATION 5.449 Earth exploration-satellite (active) 5.448B Space research (active) Radiolocation US390	Aviation (87) Private Land Mobile (90)

8650-8750 RADIOLOCATION 5.468 5.469	8650-9000 RADIOLOCATION G59	8650-9000 Radiolocation	Aviation (87) Private Land Mobile (90)
8750-8850 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471			
8850-9000 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	US53	US53	
9000-9200 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.471 5.473A	9000-9200 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION G2 5.473A G19	9000-9200 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation	
9200-9300 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	9200-9300 MARITIME RADIONAVIGATION 5.472 Radiolocation US110 G59 5.474	9200-9300 MARITIME RADIONAVIGATION 5.472 Radiolocation US110 5.474	Maritime (80) Private Land Mobile (90)
9300-9500 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION RADIONAVIGATION 5.475 5.427 5.474 5.475A 5.475B 5.476A	9300-9500 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION G56 RADIONAVIGATION US475 Meteorological aids 5.427 5.474 5.475A 5.475B US67 US71 US476A	9300-9500 RADIONAVIGATION US475 Meteorological aids Earth exploration-satellite (active) Space research (active) Radiolocation 5.427 5.474 US67 US71 US476A	Maritime (80) Aviation (87) Private Land Mobile (90)
9500-9800 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION RADIONAVIGATION 5.476A	9500-9800 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION	9500-9900 Earth exploration-satellite (active) Space research (active) Radiolocation	Private Land Mobile (90)
9800-9900 RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 5.478A 5.478B	9800-9900 RADIOLOCATION Earth exploration-satellite (active) Space research (active)		
9900-10000 RADIOLOCATION Fixed 5.477 5.478 5.479	9900-10000 RADIOLOCATION 5.479	9900-10000 Radiolocation 5.479	

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10-10.45 FIXED MOBILE RADIOLOCATION Amateur 5.479	10-10.45 RADIOLOCATION Amateur 5.479 5.480	10-10.45 FIXED MOBILE RADIOLOCATION Amateur 5.479	10-10.5 RADIOLOCATION US108 G32	10-10.45 Amateur Radiolocation US108 5.479 US128 NG50	Private Land Mobile (90) Amateur Radio (97)
10.45-10.5 RADIOLOCATION Amateur Amateur-satellite 5.481			5.479 US128	10.45-10.5 Amateur Amateur-satellite Radiolocation US108 US128 NG50	
10.5-10.55 FIXED MOBILE Radiolocation	10.5-10.55 FIXED MOBILE RADIOLOCATION		10.5-10.55 RADIOLOCATION US59		Private Land Mobile (90)
10.55-10.6 FIXED MOBILE except aeronautical mobile Radiolocation			10.55-10.6	10.55-10.6 FIXED	Fixed Microwave (101)
10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A			10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) US130 US131 US482	10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED US482 SPACE RESEARCH (passive) US130 US131	
10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483			10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US131 US246		
10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A MOBILE except aeronautical mobile		10.7-11.7 US131 US211	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 US131 US211 NG104 NG182 NG186	Satellite Communications (25) Fixed Microwave (101)
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	11.7-12.1 FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A 5.488 Mobile except aeronautical mobile 5.485 12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.488 5.485 5.489	11.7-12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A	11.7-12.2	11.7-12.2 FIXED-SATELLITE (space-to-Earth) 5.485 5.488 NG143 NG183 NG187 NG184	Satellite Communications (25)

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14-14.25 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A 5.505			14-14.2 Space research	14-14.2 FIXED-SATELLITE (Earth-to-space) NG183 NG187 Mobile-satellite (Earth-to-space) Space research	Satellite Communications (25)
14.25-14.3 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508			14.2-14.4	14.2-14.47 FIXED-SATELLITE (Earth-to-space) NG183 NG187 Mobile-satellite (Earth-to-space)	
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	14.3-14.4 FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 5.506B Mobile-satellite (Earth-to-space) 5.506A Radionavigation-satellite 5.504A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A			
14.4-14.47 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A			14.4-14.47 Fixed Mobile	NG184	
14.47-14.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A			14.47-14.5 Fixed Mobile US113 US342	14.47-14.5 FIXED-SATELLITE (Earth-to-space) NG183 NG187 Mobile-satellite (Earth-to-space) US113 US342	
14.5-14.8 FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research			14.5-14.7145 FIXED Mobile Space research	14.5-14.8	
			14.7145-14.8 MOBILE Fixed Space research		
14.8-15.35 FIXED MOBILE Space research			14.8-15.1365 MOBILE SPACE RESEARCH Fixed US310	14.8-15.1365 US310	

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17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	17.7-17.8 FIXED FIXED-SATELLITE (space-to-Earth) 5.517 (Earth-to-space) 5.516 BROADCASTING-SATELLITE Mobile 5.515	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	17.7-17.8 US401 G117	17.7-17.8 FIXED FIXED-SATELLITE (Earth-to-space) US271 US401	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
	17.8-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE 5.519		17.8-18.3 FIXED-SATELLITE (space-to-Earth) US334 G117 US519	17.8-18.3 FIXED US334 US519	TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
18.1-18.4 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE 5.519 5.521			18.3-18.6 FIXED-SATELLITE (space-to-Earth) US334 G117 US139	18.3-18.6 FIXED-SATELLITE (space-to-Earth) NG164 US334 US139	Satellite Communications (25)
18.4-18.6 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE					
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20.1-20.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528			US139	5.525 5.526 5.527 5.528 5.529 US334	
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United States (US) Footnotes

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US52 In the VHF maritime mobile band (156–162 MHz), the following provisions shall apply:

(a) Federal stations in the maritime mobile service may also be authorized as follows: (1) Vessel traffic services under the control of the U.S. Coast Guard on a simplex basis by coast and ship stations on the frequencies 156.250 MHz (Channel 05), 156.550 MHz (Channel 11), 156.600 MHz (Channel 12) and 156.700 MHz (Channel 14); (2) Inter-ship use of the frequency 156.300 MHz (Channel 06) on a simplex basis; (3) Navigational bridge-to-bridge and navigational communications on a simplex basis by coast and ship stations on the frequency 156.650 MHz (Channel 13) and on the Lower Mississippi River the frequency 156.375 MHz (Channel 67); (4) Port operations use on a simplex basis by coast and ship stations on the frequencies 156.600 MHz and 156.700 MHz; (5) Environmental communications on the frequency 156.750 MHz (Channel 15) in accordance with the national plan; and (6) Duplex port operations use of the frequencies 157.000 MHz for ship stations and 161.600 MHz for coast stations (Channel 20).

(b) The frequency 156.300 MHz may also be used by Federal and non-Federal aircraft stations for the purpose of search and rescue operations and other safety-related communications.

(c) The frequencies 156.775 MHz (Channel 75) and 156.825 MHz (Channel 76) are available on a primary basis to Federal and non-Federal stations in the maritime mobile service for navigation-related port operations or ship movement only, and all precautions must be taken to avoid harmful interference to 156.800 MHz (Channel 16).

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US74 In the bands 25.55–25.67, 73–74.6, 406.1–410, 608–614, 1400–1427, 1660.5–1670, 2690–2700, and 4990–5000 MHz, and in the bands 10.68–10.7, 15.35–15.4, 23.6–24.0, 31.3–31.5, 86–92, 100–102, 109.5–111.8, 114.25–116, 148.5–151.5, 164–167, 200–209, and 250–252 GHz, the radio astronomy service shall be protected from unwanted emissions only to the extent that such radiation exceeds the level which would be present if the offending station were operating in compliance with the technical standards or criteria applicable to the service in which it operates. Radio astronomy observations in these bands are performed at the locations listed in US385.

US79 In the bands 1390–1400 MHz and 1427–1432 MHz, the following provisions shall apply:

(a) Airborne and space-to-Earth operations are prohibited.

(b) Federal operations (except for devices authorized by the FCC for the Wireless Medical Telemetry Service) are on a non-interference basis to non-Federal operations and shall not constrain implementation of non-Federal operations.

* * * * *

US85 Differential-Global-Positioning-System (DGPS) Stations, limited to ground-based transmitters, may be authorized on a primary basis in the band 1559–1610 MHz for the specific purpose of transmitting DGPS information intended for aircraft navigation.

* * * * *

US100 The bands 2310–2320 and 2345–2360 MHz are also available for Federal aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof on a secondary basis to the Wireless Communications Service (WCS). The band 2345–2360 MHz is also available to non-Federal applicants on a secondary basis to the WCS for these same purposes. The following two frequencies are shared on a co-equal basis by Federal stations for telemetering and associated telecommand operations of expendable and re-usable launch vehicles whether or not such operations involve flight testing: 2312.5 and 2352.5 MHz. Other Federal mobile telemetering uses may be provided on a non-interference basis to the above uses. The broadcasting-satellite service (sound) during implementation should also take cognizance of the expendable and reusable launch vehicle frequencies 2312.5 and 2352.5 MHz, to minimize the impact on this mobile service use to the extent possible.

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US111 In the band 5091–5150 MHz, aeronautical mobile telemetry operations for flight testing are conducted at the following locations. Flight testing at additional locations may be authorized on a case-by-case basis.

Location	Test sites	Lat. (N)	Long. (W)
Gulf Area Ranges Complex (GARC).	Eglin AFB, Tyndall AFB, FL; Gulfport ANG Range, MS; Ft. Rucker, Redstone, NASA Marshall Space Flight Center, AL.	30°28′	86°31′
Utah Ranges Complex (URC)	Dugway PG; Utah Test & Training Range (Hill AFB), UT	40°57′	113°05′
Western Ranges Complex (WRC)	Pacific Missile Range; Vandenberg AFB, China Lake NAWS, Pt. Mugu NAWS, Edwards AFB, Thermal, Nellis AFB, Ft. Irwin, NASA Dryden Flight Research Center, Victorville, CA.	35°29′	117°16′
Southwest Ranges Complex (SRC).	Ft. Huachuca, Tucson, Phoenix, Mesa, Yuma, AZ	31°33′	110°18′
Mid-Atlantic Ranges Complex (MARC).	Patuxent River, Aberdeen PG, NASA Langley Research Center, NASA Wallops Flight Facility, MD.	38°17′	76°24′
New Mexico Ranges Complex (NMRC).	White Sands Missile Range, Holloman AFB, Albuquerque, Roswell, NM; Amarillo, TX.	32°11′	106°20′
Colorado Ranges Complex (CoRC).	Alamosa, Leadville, CO	37°26′	105°52′
Texas Ranges Complex (TRC)	Dallas/Ft. Worth, Greenville, Waco, Johnson Space Flight Center/Ellington Field, TX.	32°53′	97°02′
Cape Ranges Complex (CRC)	Cape Canaveral, Palm Beach-Dade, FL	28°33′	80°34′
Northwest Range Complex (NWRC).	Seattle, Everett, Spokane, Moses Lake, WA; Klamath Falls, Eugene, OR.	47°32′	122°18′
St. Louis	St Louis, MO	38°45′	90°22′
Wichita	Wichita, KS	37°40′	97°26′
Marietta	Marietta, GA	33°54′	84°31′
Glasgow	Glasgow, MT	48°25′	106°32′
Wilmington/Ridley	Wilmington, DE/Ridley, PA	39°49′	75°26′

Location	Test sites	Lat. (N)	Long. (W)
San Francisco Bay Area (SFBA)	NASA Ames Research Center, CA	37°25′	122°03′

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US113 Radio astronomy observations of the formaldehyde line frequencies 4825–4835 MHz and 14.47–14.5 GHz may be made at certain radio astronomy observatories as indicated below:

BANDS TO BE OBSERVED

4 GHz	14 GHz	Observatory
X		National Astronomy and Ionosphere Center (NAIC), Arecibo, PR.
X	X	National Radio Astronomy Observatory (NRAO), Green Bank, WV.
X	X	NRAO, Socorro, NM.
X		Allen Telescope Array (ATA), Hat Creek, CA.
X	X	Owens Valley Radio Observatory (OVRO), Big Pine, CA.
X	X	NRAO's ten Very Long Baseline Array (VLBA) stations (see US131).
X	X	University of Michigan Radio Astronomy Observatory, Stinchfield Woods, MI.
X		Pisgah Astronomical Research Institute, Rosman, NC.

Every practicable effort will be made to avoid the assignment of frequencies to stations in the fixed or mobile services in these bands. Should such assignments result in harmful interference to these observations, the situation will be remedied to the extent practicable.

* * * * *

US139 Fixed stations authorized in the band 18.3–19.3 GHz that remain co-primary under the provisions of 47 CFR 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r) may continue operations consistent with the provisions of those sections.

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US145 The following unwanted emission power limits from non-geostationary satellite orbit systems in the inter-satellite service (NGSO ISS) transmitting in the band 22.55–23.55 GHz shall apply in any 200 MHz of the passive band 23.6–24 GHz:

(a) Non-Federal licensees holding a valid authorization on [insert effective date of R&O] to operate in this band may continue to operate as authorized, subject to proper license renewal.

(b) For all other NGSO ISS systems, based on the date that complete advance publication information is received by the ITU's Radiocommunication Bureau, the following limits apply:

(1) For information received before January 1, 2020: –36 dBW.

(2) For information received on or after January 1, 2020: –46 dBW.

US156 In the bands 49.7–50.2 GHz and 50.4–50.9 GHz, for earth stations in the fixed-satellite service (Earth-to-space), the unwanted emission power in the band 50.2–50.4 GHz shall not exceed –20 dBW/200 MHz (measured at the input of the antenna), except that the maximum unwanted emission power may be increased to –10 dBW/200 MHz for earth stations having an antenna gain greater than or equal to 57 dBi. These limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

US157 In the band 51.4–52.6 GHz, for stations in the fixed service, the unwanted emission power in the band 52.6–54.25 GHz shall not exceed –33 dBW/100 MHz (measured at the input of antenna).

US161 In the bands 81–86 GHz, 92–94 GHz, and 94.1–95 GHz and within the coordination distances indicated below, assignments to allocated services shall be coordinated with the following radio astronomy observatories. New observatories shall not receive protection from fixed stations that are licensed to operate in the one hundred most populous urbanized areas as defined by the U.S. Census Bureau for the year 2000.

(a) Within 25 km of the National Radio Astronomy Observatory's (NRAO's) Very Long Baseline Array (VLBA) Stations:

State	VLBA station	Lat. (N)	Long. (W)
AZ	Kitt Peak	31°57′23″	111°36′45″
CA	Owens Valley	37°13′54″	118°16′37″
HI	Mauna Kea	19°48′05″	155°27′20″
IA	North Liberty	41°46′17″	091°34′27″
NH	Hancock	42°56′01″	071°59′12″
NM	Los Alamos	35°46′30″	106°14′44″
NM	Pie Town	34°18′04″	108°07′09″
TX	Fort Davis	30°38′06″	103°56′41″
VI	Saint Croix	17°45′24″	064°35′01″
WA	Brewster	48°07′52″	119°41′00″

(b) Within 150 km of the following observatories:

State	Telescope and site	Lat. (N)	Long. (W)
AZ	Heinrich Hertz Submillimeter Observatory, Mt. Graham	32°42′06″	109°53′28″

State	Telescope and site	Lat. (N)	Long. (W)
AZ	University of Arizona 12-m Telescope, Kitt Peak	31°57′12″	111°36′53″
CA	Caltech Telescope, Owens Valley	37°13′54″	118°17′36″
CA	Combined Array for Research in Millimeter-wave Astronomy (CARMA)	37°16′43″	118°08′32″
HI	James Clerk Maxwell Telescope, Mauna Kea	19°49′33″	155°28′47″
MA	Haystack Observatory, Westford	42°37′24″	071°29′18″
NM	NRAO's Very Large Array, Socorro	34°04′44″	107°37′06″
WV	NRAO's Robert C. Byrd Telescope, Green Bank	38°25′59″	079°50′23″

Note: Satisfactory completion of the coordination procedure utilizing the automated mechanism, see 47 CFR 101.1523, will be deemed to establish sufficient separation from radio astronomy observatories, regardless of whether the distances set forth above are met.

US197A The band 108–117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service (AM(R)S), limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution 413 (Rev. WRC–07). AM(R)S use of the band 108–112 MHz shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. AM(R)S use of the band 108–117.975 MHz shall not constrain the use of the band 88–108 MHz by stations in the broadcasting service operating in accordance with 47 CFR part 73.

* * * * *

US227 The bands 156.4875–156.5125 MHz and 156.5375–156.5625 MHz are also allocated to the fixed and land mobile services on a primary basis for non-Federal use in VHF Public Coast Station Areas 10–42. The use of these bands by the fixed and land mobile services shall not cause harmful interference to, nor claim protection from, the maritime mobile VHF radiocommunication service.

US228D The use of the bands 161.9625–161.9875 MHz (AIS 1 with center frequency 161.975 MHz) and 162.0125–162.0375 MHz (AIS 2 with center frequency 162.025 MHz) by the maritime mobile service is restricted to Automatic Identification Systems (AIS), except that non-Federal stations in the band 161.9625–161.9875 MHz may continue to operate on a primary basis according to the following schedule: (a) In VHF Public Coast Service Areas (VPCSAs) 1–9, site-based stations licensed prior to November 13, 2006 may continue to operate until expiration of the license term for licenses in active status as of November 13, 2006; and (b) In VPCSAs 10–42, site-based stations licensed prior to March 2, 2009 may continue to operate until March 2, 2024. *See* 47 CFR 80.371(c)(1)(ii) for the definition of VPCSAs.

* * * * *

US334 In the band 17.8–20.2 GHz, Federal space stations in both geostationary (GSO) and non-geostationary satellite orbits (NGSO) and associated earth stations in the fixed-satellite service (FSS) (space-to-Earth) may be authorized on a primary basis. For a Federal GSO FSS network to operate on a primary basis, the space station shall be located outside the arc, measured from east to west, 70–120° West longitude. Coordination between Federal FSS systems and non-Federal space and terrestrial systems operating in accordance with the United States Table of Frequency Allocations is required.

(a) In the sub-bands 17.8–18.3 GHz and 19.3–19.7 GHz, Federal earth stations shall be authorized on a primary basis only in the following areas: Denver, Colorado; Washington, DC; San Miguel, California; and Guam. Prior to the commencement of non-Federal terrestrial operations in these areas, the FCC shall coordinate all applications for new stations and modifications to existing stations with NTIA as specified in 47 CFR 1.924(f), 74.32, and 78.19(f).

(b) In the sub-band 17.8–19.7 GHz, the power flux-density (pfd) at the surface of the Earth produced by emissions from a Federal GSO space station or from a Federal space station in a NGSO constellation of 50 or fewer satellites, for all conditions and for all methods of modulation, shall not exceed the following values in any 1 MHz band:

(1) -115 dB(W/m^2) for angles of arrival above the horizontal plane (δ) between 0° and 5°,

(2) $-115 + 0.5(\delta - 5)$ dB(W/m^2) for δ between 5° and 25°, and

(3) -105 dB(W/m^2) for δ between 25° and 90°.

(c) In the sub-band 17.8–19.3 GHz, the pfd at the surface of the Earth produced by emissions from a Federal space station in an NGSO constellation of 51 or more satellites, for all conditions and for all methods of modulation, shall not exceed the following values in any 1 MHz band:

(1) $-115 - X$ dB(W/m^2) for δ between 0° and 5°,

(2) $-115 - X + ((10 + X)/20)(\delta - 5)$ dB(W/m^2) for δ between 5° and 25°, and

(3) -105 dB(W/m^2) for δ between 25° and 90°; where X is defined as a function of the number of satellites, n, in an NGSO constellation as follows:

For $n \leq 288$, $X = (5/119)(n - 50)$ dB; and

For $n > 288$, $X = (1/69)(n + 402)$ dB.

* * * * *

US338A In the band 1435–1452 MHz, operators of aeronautical telemetry stations are encouraged to take all reasonable steps to ensure that unwanted emission power does not exceed -28 dBW/27 MHz in the band 1400–1427 MHz.

* * * * *

US343 In the mobile service, the frequencies between 1435 and 1525 MHz will be assigned for aeronautical telemetry and associated telecommand operations for flight testing of manned or unmanned aircraft and missiles, or their major components. Permissible usage includes telemetry associated with launching and reentry into the Earth's atmosphere as well as any incidental orbiting prior to reentry of manned objects undergoing flight tests. The following frequencies are shared on a co-equal basis with flight telemetering mobile stations: 1444.5, 1453.5, 1501.5, 1515.5, and 1524.5 MHz.

* * * * *

US401 In the band 17.7–17.8 GHz, Federal earth stations in the fixed-satellite service (space-to-Earth) may be authorized in the Denver, Colorado; Washington, DC; San Miguel, California; and Guam areas on a primary basis. Prior to commencement of operations in these areas, the FCC shall coordinate fixed service applications supporting Multichannel Video Programming Distributors (MVPD) with NTIA.

* * * * *

US475 The use of the band 9300–9500 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons. In addition, ground-based radar beacons in the aeronautical

radionavigation service are permitted in the band 9300–9320 MHz on the condition that harmful interference is not caused to the maritime radionavigation service.

US476A In the band 9300–9500 MHz, Federal stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from, stations of the radionavigation and Federal radiolocation services.

US482 In the band 10.6–10.68 GHz, the following provisions and urgings apply:

(a) Non-Federal use of the fixed service shall be restricted to point-to-point systems, with each station supplying not more than −3 dBW of transmitter power to the antenna and producing not more than 40 dBW of EIRP. However, licensees holding a valid authorization on [insert effective date of R&O] to operate in this band may continue to operate as authorized, subject to proper license renewal.

(b) In order to minimize interference to the Earth exploration-satellite service (passive) receiving in this band, licensees of stations in the fixed service are urged to: (1) Limit the maximum transmitter power supplied to the antenna to −15 dBW; (2) limit the maximum elevation angle of the antenna main beam to 20°; and (3) employ automatic transmitter power control (ATPC). The maximum transmitter power supplied to the antenna of stations using ATPC may be increased by a value corresponding to the ATPC range, up to a maximum of −3 dBW.

US519 The band 18–18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article 21, Table 21–4 of the ITU *Radio Regulations.*

US532 In the bands 21.2–21.4 GHz, 22.21–22.5 GHz, and 56.26–58.2 GHz, the space research and Earth exploration-satellite services shall not receive protection from the fixed and mobile services operating in accordance with the Table of Frequency Allocations.

US550A In the band 36–37 GHz, the following provisions shall apply:

(a) For stations in the mobile service, the transmitter power supplied to the antenna shall not exceed −10 dBW, except that the maximum transmitter power may be increased to −3 dBW for stations used for public safety and disaster management.

(b) For stations in the fixed service, the elevation angle of the antenna main beam shall not exceed 20° and the transmitter power supplied to the antenna shall not exceed:

(1) −5 dBW for hub stations of point-to-multipoint systems; or

(2) −10 dBW for all other stations, except that the maximum transmitter power of stations using automatic transmitter power control (ATPC) may be increased by a value corresponding to the ATPC range, up to a maximum of −7 dBW.

Non-Federal Government (NG) Footnotes

* * * * *

NG22 The frequencies 156.050 and 156.175 MHz may be assigned to stations in the maritime mobile service for commercial and port operations in the New Orleans Vessel Traffic Service (VTS) area and the frequency 156.250 MHz may be assigned to stations in the maritime mobile service for port operations in the New Orleans and Houston VTS areas.

* * * * *

NG35 Frequencies in the bands 928–929 MHz, 932–932.5 MHz, 941–941.5 MHz, and 952–960 MHz may be assigned for multiple address systems and associated mobile operations on a primary basis.

* * * * *

NG60 In the band 31–31.3 GHz, licensees of stations in the fixed service are urged to limit the maximum elevation angle of the antenna main beam to 20° and to employ automatic transmitter power control.

* * * * *

NG338A In the bands 1390–1395 MHz and 1427–1435 MHz bands, licensees are encouraged to take all reasonable steps to ensure that unwanted emission power does not exceed the following levels in the band 1400–1427 MHz:

(a) For stations of point-to-point systems in the fixed service: −45 dBW/27 MHz.

(b) For stations in the mobile service (except for devices authorized by the FCC for the Wireless Medical Telemetry Service): −60 dBW/27 MHz.

* * * * *

PART 74—EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES

7. The authority citation for part 74 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, 307, 336(f), 336(h) and 554.

8. Section 74.32 is revised to read as follows:

§ 74.32 Operation in the 17.7–17.8 GHz and 17.8–19.7 GHz bands.

The following exclusion areas and coordination areas are established to minimize or avoid harmful interference to Federal Government earth stations receiving in the 17.7–19.7 GHz band:

(a) No application seeking authority for fixed stations supporting the operations of Multichannel Video Programming Distributors (MVPD) in the 17.7–17.8 GHz band or to operate in the 17.8–19.7 GHz band for any service will be accepted for filing if the proposed station is located within 20 km of Denver, CO (39°43′ N, 104°46′ W) or Washington, DC (38°48′ N, 76°52′ W).

(b) Any application for a new station license to provide MVPD operations in the 17.7–17.8 GHz band or to operate in the 17.8–19.7 GHz band for any service, or for modification of an existing station license in these bands which would change the frequency, power, emission, modulation, polarization, antenna height or directivity, or location of such a station, must be coordinated with the Federal Government by the Commission before an authorization will be issued, if the station or proposed station is located in whole or in part within any of the following areas:

(1) *Denver, CO area:*

(i) Between latitudes 41°30′ N and 38°30′ N and between longitudes 103°10′ W and 106°30′ W.

(ii) Between latitudes 38°30′ N and 37°30′ N and between longitudes 105°00′ W and 105°50′ W.

(iii) Between latitudes 40°08′ N and 39°56′ N and between longitudes 107°00′ W and 107°15′ W.

(2) *Washington, DC area:*

(i) Between latitudes 38°40′ N and 38°10′ N and between longitudes 78°50′ W and 79°20′ W.

(ii) Within 178 km of 38°48′ N, 76°52′ W.

(3) *San Miguel, CA area:*

(i) Between latitudes 34°39′ N and 34°00′ N and between longitudes 118°52′ W and 119°24′ W.

(ii) Within 200 km of 35°44′ N, 120°45′ W.

(4) *Guam area:* Within 100 km of 13°35′ N, 144°51′ E.

Note to § 74.32: The coordinates cited in this section are specified in terms of the ''North American Datum of 1983 (NAD 83).''

PART 78—CABLE TELEVISION RELAY SERVICE

9. The authority citation for part 78 continues to read as follows:

Authority: Secs. 2, 3, 4, 301, 303, 307, 308, 309, 48 Stat., as amended, 1064, 1065, 1066,

1081, 1082, 1083, 1084, 1085; 47 U.S.C. 152, 153, 154, 301, 303, 307, 308, 309.

10. Section 78.19 is amended by revising paragraph (f) to read as follows:

§ 78.19 Interference.

* * * * *

(f) *17.7–19.7 GHz band.* The following exclusion areas and coordination areas are established to minimize or avoid harmful interference to Federal Government earth stations receiving in the 17.7–19.7 GHz band:

(1) No application seeking authority to operate in the 17.7–19.7 GHz band will be accepted for filing if the proposed station is located within 50 km of Denver, CO (39°43′ N, 104°46′ W) or Washington, DC (38°48′N, 76°52′ W).

(2) Any application seeking authority for a new fixed station license supporting the operations of Multichannel Video Programming Distributors (MVPD) in the 17.7–17.8 GHz band or to operate in the 17.8–19.7 GHz band for any service, or for modification of an existing station license in these bands which would change the frequency, power, emission, modulation, polarization, antenna height or directivity, or location of such a station, must be coordinated with the Federal Government by the Commission before an authorization will be issued, if the station or proposed station is located in whole or in part within any of the following areas:

(i) *Denver, CO area:*

(A) Between latitudes 41°30′ N and 38°30′ N and between longitudes 103°10′ W and 106°30′ W.

(B) Between latitudes 38°30′ N and 37°30′ N and between longitudes 105°00′ W and 105°50′ W.

(C) Between latitudes 40°08′ N and 39°56′ N and between longitudes 107°00′ W and 107°15′ W.

(ii) *Washington, DC area:*

(A) Between latitudes 38°40′ N and 38°10′ N and between longitudes 78°50′ W and 79°20′ W.

(B) Within 178 km of 38°48′ N, 76°52′ W.

(iii) *San Miguel, CA area:*

(A) Between latitudes 34°39′ N and 34°00′ N and between longitudes 118°52′ W and 119°24′ W.

(B) Within 200 km of 35°44′ N, 120°45′ W.

(iv) *Guam area:* Within 100 km of 13°35′ N, 144°51′ E.

Note to § 78.19(f): The coordinates cited in this section are specified in terms of the ''North American Datum of 1983 (NAD 83).''

* * * * *

PART 87—AVIATION SERVICES

11. The authority citation for Part 87 continues to read as follows:

Authority: 47 U.S.C. 154, 303 and 307(e), unless otherwise noted.

12. Section 87.5 is amended by adding in alphabetical order a definition for ''flight telemetering mobile station'' to read as follows:

§ 87.5 Definitions.

* * * * *

Flight telemetering mobile station. A telemetering mobile station used for transmitting data from an airborne vehicle, excluding data related to airborne testing of the vehicle itself (or major components thereof).

* * * * *

13. Section 87.133 is amended by revising paragraph (f) to read as follows:

§ 87.133 Frequency stability.

* * * * *

(f) The carrier frequency tolerance of all transmitters operating in the 1435–1525 MHz and 2345–2395 MHz bands is 0.002 percent. The carrier frequency tolerance of all transmitters operating in the 5091–5150 MHz band is 0.005 percent.

* * * * *

14. Section 87.137 is amended by revising note 8 to the table of assignable emissions in paragraph (a) to read as follows:

§ 87.137 Types of emission.

(a) * * *

Notes:

* * * * *

[8] The authorized bandwidth is equal to the necessary bandwidth for frequency or digitally modulated transmitters used in aeronautical telemetering and associated aeronautical telemetry or telecommand stations operating in the 1435–1525 MHz, 2345–2395 MHz, and 5091–5150 MHz bands. The necessary bandwidth must be computed in accordance with part 2 of this chapter.

* * * * *

15. Section 87.139 is amended by revising paragraph (a) introductory text, paragraph (d), and paragraphs (e) introductory text and (f) introductory text to read as follows:

§ 87.139 Emission limitations.

(a) Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435–1525 MHz, 2345–2395 MHz, and 5091–5150 MHz bands or digital modulation (G7D) for differential GPS, the mean power of any emission must be attenuated below the mean power of the transmitter (pY) as follows:

* * * * *

(d) Except for telemetry in the 1435–1525 MHz band, when the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth for aircraft stations above 30 MHz and all ground stations the attenuation must be at least 43 + 10 $\log_{10}$pY dB.

(e) When using frequency modulation or digital modulation for telemetry or telecommand in the 1435–1525 MHz, 2345–2395 MHz, or 5091–5150 MHz bands with an authorized bandwidth equal to or less than 1 MHz the emissions must be attenuated as follows:.

* * * * *

(f) When using frequency modulation or digital modulation for telemetry or telecommand in the 1435–1525 MHz, 2345–2395 MHz, or 5091–5150 MHz bands with an authorized bandwidth greater than 1 MHz, the emissions must be attenuated as follows:

* * * * *

16. Section 87.173 is amended by revising the frequency table in paragraph (b) as follows:

a. The entry for the 2310–2320 MHz band is removed.

b. The entry for the 5000–5250 MHz band is removed.

c. An entry for the 5030–5091 MHz band is added.

d. Entries for the 5091–5150 MHz and 24450–24650 MHz bands are added.

The additions read as follows:

§ 87.173 Frequencies.

* * * * *

(b) Frequency table:

Frequency or frequency band	Subpart	Class of station	Remarks
* * *	*	* *	*
5030–5091 MHz	Q	MA, RLW	Microwave landing systems.
5031.000 MHz	Q	RLT	
5091–5150 MHz	J	MA, FAT	Aeronautical telemetry.

Frequency or frequency band	Subpart	Class of station	Remarks
* * * * * * *			
24450–24650 MHz	F, Q	MA, RL	Aeronautical radionavigation.
* * * * * * *			

* * * * *

17. Section 87.187 is amended by revising paragraph (p) to read as follows:

§ 87.187 Frequencies.

* * * * *

(p) The 1435–1525 MHz and 2360–2395 MHz bands are available on a primary basis and the 2345–2360 MHz band is available on a secondary basis for telemetry and telecommand associated with the flight testing of aircraft, missiles, or related major components. This includes launching into space, reentry into the Earth's atmosphere and incidental orbiting prior to reentry. In the 1435–1525 MHz band, the following frequencies are shared on a co-equal basis with flight telemetering mobile stations: 1444.5, 1453.5, 1501.5, 1515.5, and 1524.5 MHz. In the 2360–2395 MHz band, the following frequencies may be assigned for telemetry and associated telecommand operations of expendable and re-usable launch vehicles, whether or not such operations involve flight testing: 2364.5, 2370.5 and 2382.5 MHz. See § 87.303(d).

Note to paragraph (p): Aeronautical telemetry operations must protect Miscellaneous Wireless Communications Services operating in the 2345–2360 MHz band.

* * * * *

18. Section 87.303 is amended by revising paragraph (d) to read as follows:

§ 87.303 Frequencies.

* * * * *

(d) Aeronautical mobile telemetry (AMT) operations are conducted in the 1435–1525 MHz, 2345–2395 MHz, and 5091–5150 MHz bands on a co-equal basis with U.S. Government stations.

(1) Frequencies in the 1435–1525 MHz and 2360–2395 MHz bands are assigned in the mobile service primarily for aeronautical telemetry and associated telecommand operations for flight testing of aircraft and missiles, or their major components. The 2345–2360 MHz band is also available for these purposes on a secondary basis. Permissible uses of these bands include telemetry and associated telecommand operations associated with the launching and reentry into the Earth's atmosphere, as well as any incidental orbiting prior to reentry, of objects undergoing flight tests. In the 1435–1525 MHz band, the following frequencies are shared on a co-equal basis with flight telemetering mobile stations: 1444.5, 1453.5, 1501.5, 1515.5, and 1524.5 MHz. In the 2360–2395 MHz band, the following frequencies may be assigned for telemetry and associated telecommand operations of expendable and re-usable launch vehicles, whether or not such operations involve flight testing: 2364.5, 2370.5 and 2382.5 MHz. All other mobile telemetry uses of the 2360–2395 MHz band shall be on a non-interfering and unprotected basis to the above uses.

(2) Frequencies in the 5091–5150 MHz band are assigned in the aeronautical mobile service on a primary basis for flight testing of aircraft. AMT use of these frequencies is restricted to aircraft stations transmitting to aeronautical stations (AMT ground stations) in the flight test areas listed in 47 CFR 2.106, footnote US111.

(3) The authorized bandwidths for stations operating in the 1435–1525 MHz, 2345–2395 MHz, and 5091–5150 MHz bands are normally 1, 3 or 5 MHz. Applications for greater bandwidths will be considered in accordance with the provisions of § 87.135. Each assignment will be centered on a frequency between 1435.5 MHz and 1524.5 MHz, between 2345.5 MHz and 2394.5 MHz, or between 5091.5 MHz and 5149.5 MHz, with 1 MHz channel spacing.

* * * * *

19. Section 87.305 is amended by revising paragraph (a)(1) to read as follows:

§ 87.305 Frequency coordination.

(a)(1) Each application for a new station license, renewal or modification of an existing license concerning flight test frequencies, except as provided in paragraph (b) of this section, must be accompanied by a statement from a frequency advisory committee. The committee must comment on the frequencies requested or the proposed changes in the authorized station and the probable interference to existing stations. The committee must consider all stations operating on the frequencies requested or assigned within 320 km (200 mi) of the proposed area of operation and all prior coordination and assignments on the proposed frequency(ies). The committee must also recommend frequencies resulting in the minimum interference. The Committee must coordinate in writing all requests for frequencies or proposed operating changes in the 1435–1525 MHz, 2345–2395 MHz, and 5091–5150 MHz bands with the responsible Government Area Frequency Coordinators listed in the NTIA ''Manual of Regulations and Procedures for Federal Radio Frequency Management.'' In addition, committee recommendations may include comments on other technical factors and may contain recommended restrictions which it believes should appear on the license.

* * * * *

PART 90—PRIVATE LAND MOBILE RADIO SERVICES

20. The authority citation for part 90 continues to read as follows:

Authority: Sections 4(i), 11, 303(g), 303(r), and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), and 332(c)(7), and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112–96, 126 Stat. 156.

21. Section 90.103 is amended by revising the Kilohertz portion of the Radiolocation Service Frequency Table in paragraph (b) and by removing and reserving paragraphs (c)(25) through (28) to read as follows:

§ 90.103 Radiolocation Service.

* * * * *

(b) * * *

RADIOLOCATION SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitation
Kilohertz		
70 to 90	Radiolocation land or mobile	1
90 to 110	Radiolocation land	2
110 to 130	Radiolocation land or mobile	1
1705 to 1715	.....do	4, 5, 6
1715 to 1750	.....do	5, 6
1750 to 1800	.....do	5, 6
3230 to 3400	.....do	6, 8
Megahertz		
* * * * * * *		

* * * * *

PART 97—AMATEUR RADIO SERVICE

22. The authority citation for part 97 continues to read as follows:

Authority: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply 48 Stat. 1064–1068, 1081–1105, as amended; 47 U.S.C. 151–155, 301–609, unless otherwise noted.

23. Section 97.301 is amended by revising the kHz portion of the tables in paragraphs (b), (c), and (d) to read as follows:

§ 97.301 Authorized frequency bands.

* * * * *

(b) * * *

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 97.303 (Paragraph)
MF	kHz	kHz	kHz	
160 m	1810–1850	1800–2000	1800–2000	(a), (g)
* * * * * * *				

(c) * * *

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 97.303 (Paragraph)
MF	kHz	kHz	kHz	
160 m	1810–1850	1800–2000	1800–2000	(a), (g)
* * * * * * *				

(d) * * *

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 97.303 (Paragraph)
MF	kHz	kHz	kHz	
160 m	1810–1850	1800–2000	1800–2000	(a), (g)
* * * * * * *				

* * * * *

24. Section 97.303 is amended by revising paragraphs (c) and (g) to read as follows:

§ 97.303 Frequency sharing requirements.

* * * * *

(c) Amateur stations transmitting in the 76–77.5 GHz segment, the 78–81 GHz segment, the 136–141 GHz segment, or the 241–248 GHz segment must not cause harmful interference to, and must accept interference from, stations authorized by the United States Government, the FCC, or other nations in the radiolocation service.

* * * * *

(g) Amateur stations transmitting in the 160 m band must not cause harmful interference to, and must accept

interference from, stations authorized by other nations as follows:

(1) *In Region 1:* The radiolocation service in the 1800–1810 kHz segment and the fixed and mobile except aeronautical mobile services in the 1850–2000 kHz segment. In the countries listed in footnote 5.93 (of 47 CFR 2.106), the fixed and land mobile services in the 1800–1810 kHz segment, and in the countries listed in footnotes 5.98 and 5.99, the fixed and mobile except aeronautical mobile services in the 1810–1830 kHz segment.

(2) *In Region 2:* The fixed, mobile except aeronautical mobile, radiolocation, and radionavigation services in the 1850–2000 kHz segment.

(3) *In Region 3:* The fixed, mobile except aeronautical mobile, and radionavigation services.

* * * * *

[FR Doc. 2012–31049 Filed 12–26–12; 8:45 am]

BILLING CODE 6712–01–P